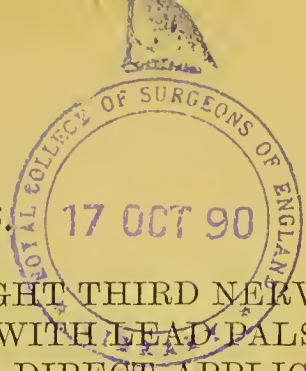


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Clinical Cases.

COMPLETE PARALYSIS OF RIGHT THIRD NERVE IN A PATIENT AFFECTED WITH LEAD PALSY —RECOVERY UNDER THE DIRECT APPLICATION OF GALVANIC CURRENTS.

BY THOMAS BUZZARD, M.D.

Physician to the National Hospital for the Paralysed and Epileptic.

H. J., æt. 38, was admitted under my care into the National Hospital for the Paralysed and the Epileptic on February 4th, 1889, affected with complete paralysis of the right third nerve.

It appears, from notes taken by Dr. Taylor, Resident Medical Officer, that until five years ago his occupation had been that of a venetian blind maker, and that his health up to that time had been good. He then began to suffer from symptoms of lead colic, and a month or two later from "numbness," first in the little fingers and then in the other fingers of both hands. His hands became weak, so that he could not grasp anything strongly. He had also, he says, great difficulty in straightening his arms, and his hands hung from the wrists. His hands improved under treatment after about six months, but then he began to have attacks of headache, from which he has suffered from time to time ever since. The headache is described as affecting the right side of the head and forehead and being worse at night.

About a month after this headache commenced he had a fit, of which he knows nothing except that he bit his tongue severely. He had no return till eighteen months before admission into the hospital, when he was convulsed but did not bite his tongue. He had five or six of these apparently severe general fits, and then others of different and unilateral character. In these last he did not lose consciousness; the right side of the face was drawn up and the right arm and leg "worked up and down." Before the fit he always had trembling in the right arm and leg. In the attack he could not speak, though he understood what was said to him. He would have such attacks about every other day for eight or nine months, but none had occurred for four or five months before admission. He became an inmate of several hospitals in turn.

Four or five months before he came under my care he suffered from some loss of feeling on the right side of the head, but his

account of this is very indefinite. On January 31st, 1889, he woke up and found he could not open the right eye. There had not been any pain in the head just before.

The patient is married. His wife has twice miscarried, and he has three living children; the eldest delicate, very dull, and it would seem mentally affected; the others healthy. One died of some unknown cause. He denies any venereal infection.

On admission he was described as a pale, anæmic looking man, complaining of pains in the arms, weakness in the hands and legs. There was ptosis of the right eyelid, with abolished movement of upper, lower, and internal rectus muscles. The pupil was dilated, and did not react.

In the left eye Mr. Gunn reported that the edges of the disc were blurred, and there was a haziness over it.

A well-marked blue line was found on the gums.

In the arms there was but feeble power of extending the wrist-joint, and the extensor communis digitorum and proprius pollicis failed to react to faradism. Omitting detail, the condition of the forearms was typically characteristic of lead paralysis.

The treatment adopted was at first indifferent, during which his symptoms remained unchanged. On February 13th he was ordered twenty grains, and on the 26th, thirty grains of iodide of potassium, to be taken three times a day. Under this the patient expressed himself as feeling generally better, and his arms stronger, but no difference shewed itself in the condition of the right eye.

On the 20th March, at his own request, he became an out-patient.

At this time he had been taking from sixty to ninety grains of iodide daily for thirty-five days, and there was no power whatever in lifting the lid or in moving either of the affected ocular muscles.

The constant current slowly interrupted was now applied in the following manner. A well-wetted plate rheophore was applied to patient's nape of neck, and connected with one pole of a Leclanché battery. The operator took the other rheophore well-wetted in his left hand, grasping the metallic portion in his palm, and applied the current to the patient's eye with the point of the index finger of his right hand. This was covered with one thickness of muslin, well wetted. The conjunctiva had been first rendered insensitve with a 2 per cent. solution of hydrochlorate of cocaine.

The strength of current which was employed marked from 1.5 to 2 m.a. on the galvanometer, and the alternate application

and lifting of the finger, making and breaking the circuit, gave rise to the feeling of an electric shock in the terminal joint of the operator's finger. The strength of the current was such as just to give rise to this sensation, and it was previously tested upon the patient's cheek.

Applications were then made in turn to the upper lid and the conjunctiva as near as could be contrived to the insertion of the internal, upper, and lower recti. The sitting occupied about two or three minutes.

A week later, on March 26th, when he was again seen, it was found that he could separate the lids by an eighth of an inch. The application was renewed, and on April 2nd it is noted that the "lids are now constantly apart. The pupils are equal. The right acts during convergence, but not for light."

On the 9th April Dr. Taylor's note runs thus: "The lower edge of the upper lid is now on a level with the upper border of the pupil. There is slight movement of the superior rectus—the inferior and internal recti remain as before. The pupils are now equal in size." He now felt his gait awkward, owing to erroneous projection, which he had hitherto been spared in consequence of the ptosis of the lid. There was marked diplopia. The galvanic applications were continued twice a week.

On April 16th it is remarked that the eye does not pass inwards beyond the vertical meridian of the palpebral aperture. On the 23rd the resident officer notes: "The right pupil is now slightly smaller than the left. Both react normally in accommodation. The right eye is as widely open as the left. The upward movement of the right globe is not quite so good as that of the left, and the downward is still more decidedly impaired, so also is the internal movement, but the eye now passes inwards beyond the vertical meridian of the aperture."

By May 15th the movement of the internal rectus was much improved, as likewise was that of the inferior, whilst the superior rectus appeared to act almost normally.

The patient was somewhat irregular in his attendance, so that the electrical applications were not made more than once a week.

In June the only defect remaining was an absence of reaction to light in the pupil of the right eye. All the external ocular muscles acted normally.

This case is marked by several features of interest. Although the gums presented a well-defined blue line, the patient had not been exposed to the action of lead in his

occupation for five years before he came under observation, and no source of more recent lead-poisoning could be discovered. There was a history of a few fits, apparently of epileptic character, the first about five years, and then none till eighteen months before admission, when he had a return of some half-dozen of the same character. These were followed by very numerous epileptiform attacks, apparently very different from the previous seizures, and pointing to some cortical lesion. The presence of optic neuritis lent confirmatory evidence in the same direction. The history of facial anæsthesia preceding the paralysis of the right third nerve is suggestive of some gross lesion in the basis cranii, affecting in succession the fifth and third nerves of that side.

What was the cause of these symptoms? It is natural, in the presence of a characteristic blue line, and of the typical features of lead palsy to ascribe the epileptic and epileptiform seizures, as well as the paralysis of the right motor oculi nerve, to the action of lead. But five years had past since the patient was, so far as is known, exposed to the action of that poison.

Moreover, although convulsive seizures are not unfrequently met with, I have never previously seen or met with any record of a case in which complete paralysis of a third nerve could be reasonably referred to the action of lead. It is true that Professor Westphal has recently published some cases of plumbic encephalopathy, in one of which paresis of one abducens oculi muscle was noted.

If the intracranial symptoms described were not due to lead it is, I suppose, most reasonable to refer them to syphilis, and to suppose that they were dependent upon gummatous deposit on the cortex cerebri, and also in the basis cranii. Such a concurrence of lesions is, of course, common enough in syphilis. To this view, however, there are two objections—one, not strong, that the patient denied any venereal disorder; the other, in my opinion a more weighty one, that although he was put under active specific treatment within fourteen days of the attack of ocular paralysis, no impression whatever was made upon this condition by large doses of iodide administered during thirty-five days. I could not

venture to say that this circumstance contra-indicated the syphilitic nature of the lesion, but I think that it throws some doubt upon it. On the other hand, the preceding lesion in the district of the fifth nerve, as well as the completeness of the eventual recovery, speak much more strongly in favour of syphilis than of lead, and appear to point pathologically to neuritis rather than to nuclear lesion.

The mode of application of the galvanic current in this case being unusual, and its results happy, I am tempted to give a few particulars of another recent instance in which the patient was favourably influenced by like treatment, though not to the same extent as in the case just related.

A married lady of about thirty-five years of age was seen by me in consultation on October 26th, 1886, suffering from complete paralysis of the left third nerve. For five weeks she had suffered from very violent pain over the left brow night and day, and for a week past this had been accompanied by severe and frequent sickness. Her condition shewed extreme suffering, and for several nights she had had no sleep at all.

She was ordered ten grains of iodide every four hours. On October 28th the pain was perhaps a little less, but still most severe. The dose was increased to fifteen grains. On the 29th she was still in great suffering. The iodide was continued, and in addition she was ordered calomel gr. $\frac{1}{4}$, with opium gr. $\frac{1}{8}$ every three hours. She got relief after the first pill, and when I saw her on November 1st she was able to eat, and appeared to be greatly improved so far as the pain was concerned. The dose of iodide was now increased to twenty grains every four hours. On the afternoon of that day the pain returned with great severity, accompanied by retching and vomiting. Morphia was now given by injection.

On November 4th the pain quieted down, and was never afterwards severe. The condition of the eye, as regards the paralysis remained unchanged. There was at no time any conjunctival hyperæmia or tenderness of the globe. The ophthalmoscope shewed no change.

The mercurial treatment was continued to salivation, and the iodide was taken three times a day, until the end of November, without however producing the slightest perceptible effect upon the paralysis of eye muscles. Early in December she was seen by

Mr. Hutchinson, who was disposed to give an unfavourable prognosis. She continued during the month in the same state.

On January 12th, 1887, when all specific treatment had been suspended for some weeks I decided to apply electric currents. The left third nerve had then been completely paralysed for more than three months, and there was not the slightest sign of any disposition to return of power. On January 12th I applied a constant current slowly interrupted in the manner just described to patient's upper lid. After a few minutes' application there appeared to be a very slight return of power in the levator palpebræ. A few days later this was a little more marked. The application was now made to the various affected muscles, and there was immediate, though slight, improvement also in these, especially in the internal rectus. After four applications, the power of the levator palpebræ appeared to be perfectly restored, the left eye being opened as widely as the right. There was diplopia on looking to her right. At the same time on each occasion the power of the internal rectus was found to be increased, and after about eight or ten applications this muscle had entirely recovered.

The patient, it should be said, being professionally occupied, her attendance was very irregular, and sometimes at long intervals. In October, 1887, after about twelve applications I made the following note: "The left eyeball now rolls upwards better—the pupil is larger than that of the right side. It does not contract to light, but reacts slightly during the effort at accommodation. There is no action in the inferior rectus. The internal rectus acts perfectly."

In January, 1888, I found that when she looked to her *left* there was some diplopia, the images being described as about four inches apart. Examination now shewed that she failed to bring the cornea to the *outer* canthus.

In November last this inability had slightly increased so that the cornea, when she looked to the left, remained at about $\frac{1}{4}$ inch. from the outer canthus. The diplopia necessarily continued. At that time there was some, but imperfect movement of the superior rectus and still less in the inferior rectus, though this was not absent. The internal rectus and levator palpebræ remained in perfect order. The condition has since not materially changed.

I would suggest the possibility that the apparent weakening of the external rectus may be due to some secondary contraction in the internal rectus muscle. One often sees in cases of peripheral paralysis of the portio dura that after recovery the contraction of previously paralysed muscles by over pulling the face gives rise to

apparent paralysis of the sound side, and it occurs to me that an analogous condition may possibly sometimes obtain as regards the internal and external rectus muscle of the eye.

We are justified, I think, in feeling that the striking and immediate effects which followed the application of the galvanic current in these cases is sufficient to indicate a relation of cause and effect, and not a mere association of coincidence. I have seen others of a similar kind, but my notes of them are not complete enough for publication.

As is well known the galvanic current is usually employed in such cases indirectly through the closed lids. It is hard to conceive that a current sufficient to influence the external ocular muscles can be carried to the requisite depth, through the resistance of the lids, without employing a strength which would be quite intolerable to the patient, and I have little doubt that the supposed galvanisation of these muscles through the lids is practically inert. The method of direct application described above was introduced by me in a paper published in the *Lancet* in 1875. It has been favourably noticed by Erb, but otherwise does not appear to have attracted attention. At the meeting of the Ophthalmological Society on July 5th, 1889, I demonstrated the mode of application.

